

Determining the Electrical Datum Plane Elevation

National Electrical Code® Article 682 and Article 555

Natural and Artificially Made Bodies of Water

Marinas, Boatyards, Residential/Commercial Docking Facilities and Floating Buildings

In the National Electrical Code (NEC), Article 555 (Marinas, Boatyards, Residential/Commercial Docking Facilities and Floating Buildings), and Article 682 (Natural and Artificially Made Bodies of Water), electrical datum planes (EDP) are mentioned. The standard dictionary defines the datum plane as a horizontal plane from which heights and depths are calculated. Generally, the EDP is the horizontal plane 2-feet above the normal high-water level, and this distance determines the level at which electrical equipment can be installed. Based on the NEC, the EPD is defined as follows:

- 1) In land areas subject to tidal fluctuation, the electrical datum plane is a horizontal plane 2-feet above the highest tide level for the area occurring under normal circumstances, that is, highest high tide.
- 2) In land areas not subject to tidal fluctuation, the electrical datum plane is a horizontal plane 2-feet above the highest water level for the area occurring under normal circumstances.
- 3) The electrical datum plane for floating piers and landing stages that are (a) installed to permit rise and fall response to water level, without lateral movement, and (b) that are so equipped that they can rise to the datum plane established for (1) or (2), is a horizontal plane 30-inches above the water level at the floating pier or landing stage and a minimum of 12-inches above the level of the deck.

The NEC Handbook commentary further explains the term Electrical Datum Plane; “The EDP encompasses areas subject to tidal movement and areas in which the water level is affected by conditions such as climate (rain or snowfall) or by human intervention (the opening or closing of dams or floodgates). In either case, the term covers the normal highest water level, such as an astronomical high tide. The term does not cover extremes due to natural or manmade disasters.”

When determining the EPD, the authority having jurisdiction (AHJ) must make an educated and informed decision as to what the “normal” high-water level could be. The Minnesota Department of Natural Resources (DNR) has similar information and documentation that can be used for all bodies of water in Minnesota when applying this NEC requirement. The DNR’s term is “Ordinary High-Water Level” (OHWL). The OHWL is defined as “an elevation delineating the highest water level that has been

maintained for a sufficient period of time to leave evidence upon the landscape, commonly the point where the natural vegetation changes from predominantly aquatic to predominantly terrestrial.”

See Minnesota Statutes 103G.005 Subdivision 14, for the DNR definition.

The Department will use the definition in the NEC, together with the DNR’s OHWL, to determine the minimum height of the electrical equipment. However, when an electrical installation is located in a floodplain or next to a tributary that moves excessive rain or snow run-off, it is critically important to have conversations with local officials (marina managers, DNR personnel, building, zoning and etc.) prior to the construction to assist the electrical contractor and AHJ in determining the proper elevation level for all electrical equipment.

